

24rd CRC On-Road Vehicle Emissions Workshop
San Diego, California
March 30 – April 2, 2014

THE “GREAT” RECESSION AND ITS IMPACT ON LIGHT-DUTY VEHICLE EMISSIONS

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Acknowledgments

California Air Resources Board

Contract 12-303

Coordinating Research Council

E-106

National Renewable Energy Laboratory

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Measurements and Equipment

Sites and Measurement Dates www.feat.biochem.du.edu	DU FEAT Single Measurement Stdev
Van Nuys CA – August 2010 (12,963 records)	NDIR – CO ₂ CO ± 4 g/kg HC ± 4 g/kg %Opacity ± 0.8%
W. Los Angeles – May 2013 (27,247 records)	UV – NO ± 0.4 g/kg NO ₂ ± 0.3 g/kg NH ₃ ± 0.02 g/kg
Tulsa, OK – October 2013 (21,115 records)	
Denver, CO – January 2014 (19,242 records)	Speed and Acceleration License Plate Photo



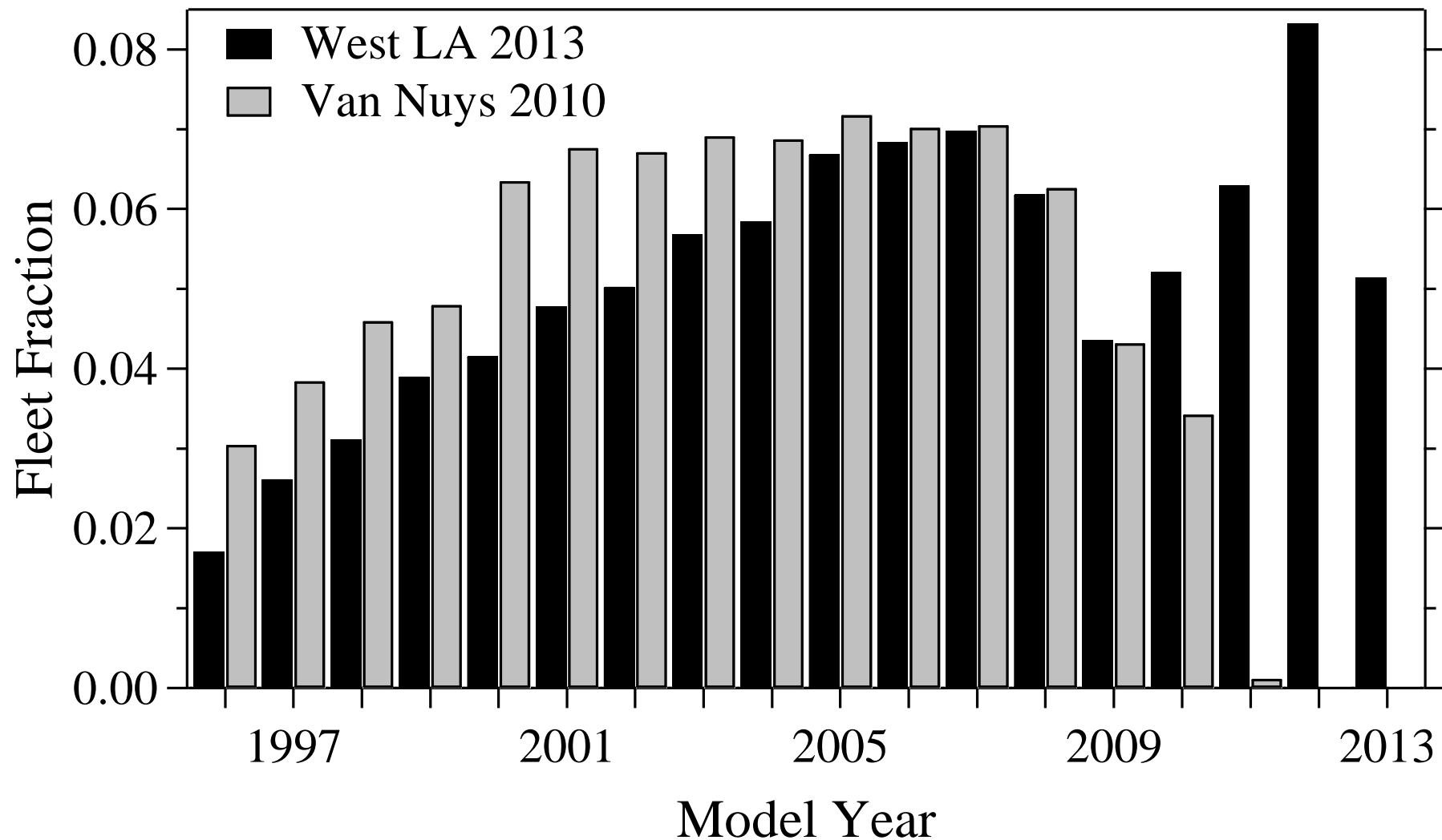
New Vehicle Sales and Registration Statistics

- Nationwide new vehicle sales in 2009 were 35% less than 2007 sales
- California new vehicle registrations in 2009 were 45% less than 2007
- 2012 California new vehicle registrations were 18% below 2007 levels

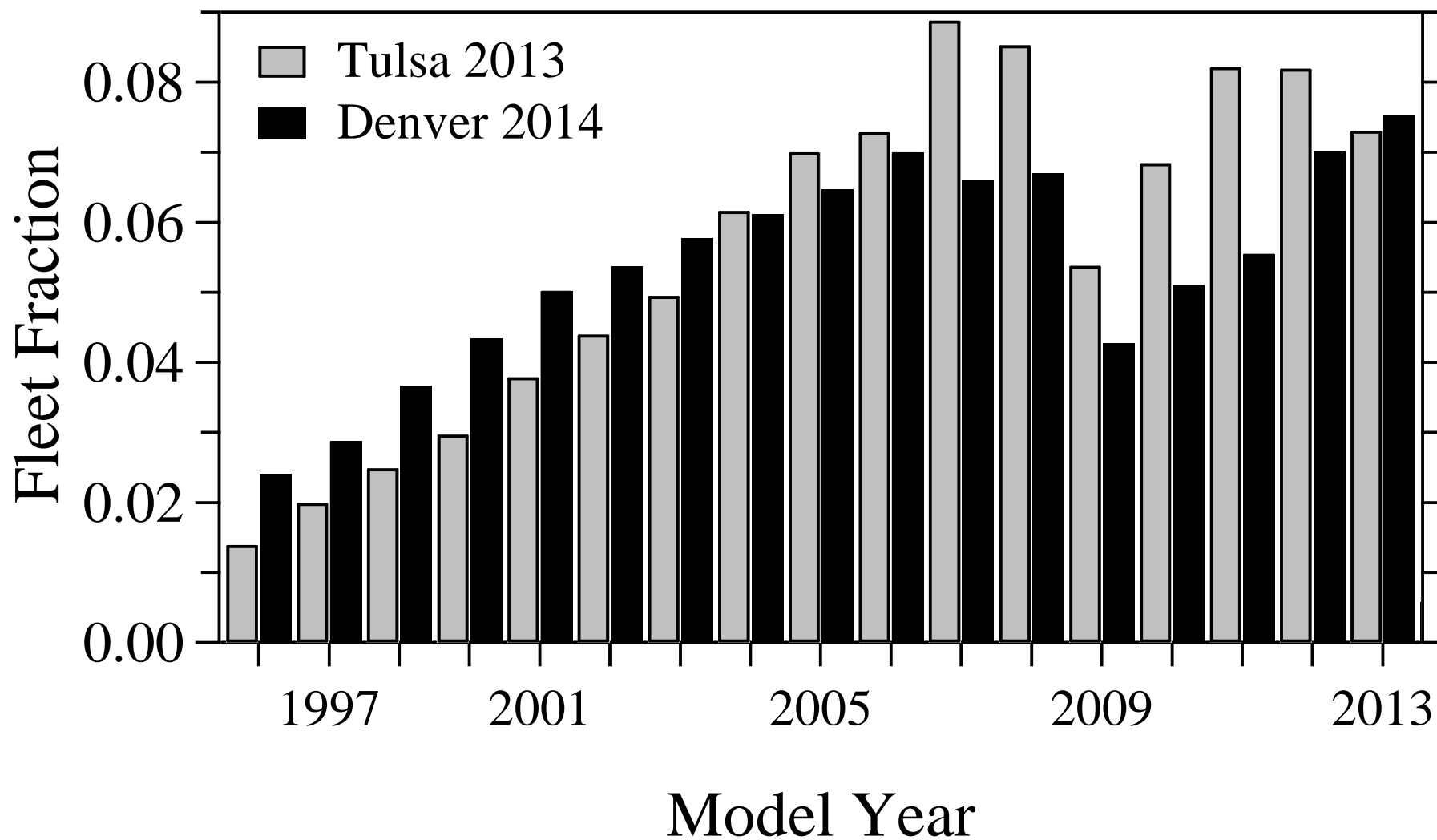
Source: National Automobile Dealers Association

West LA and Van Nuys

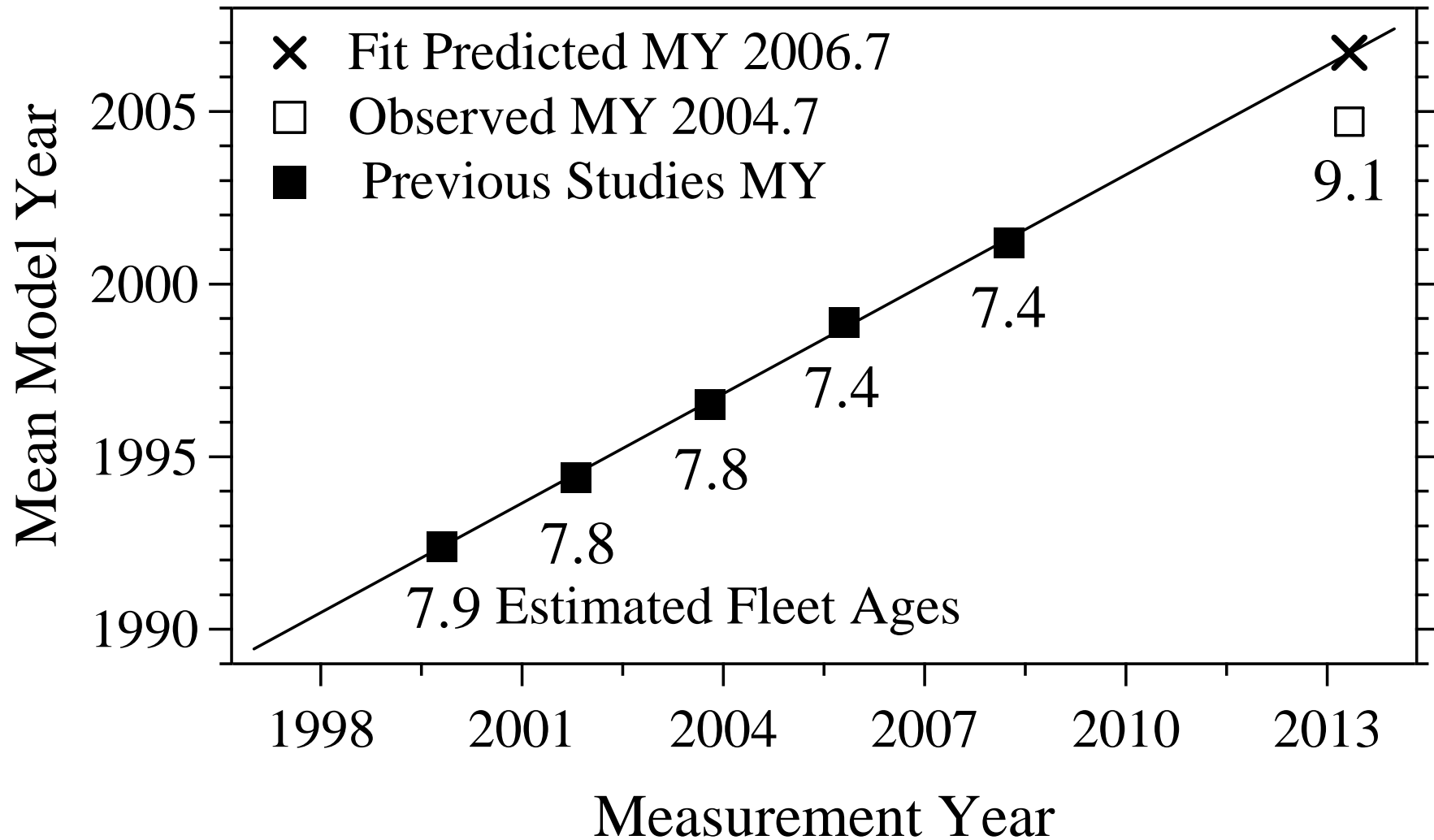
Fleet Fractions



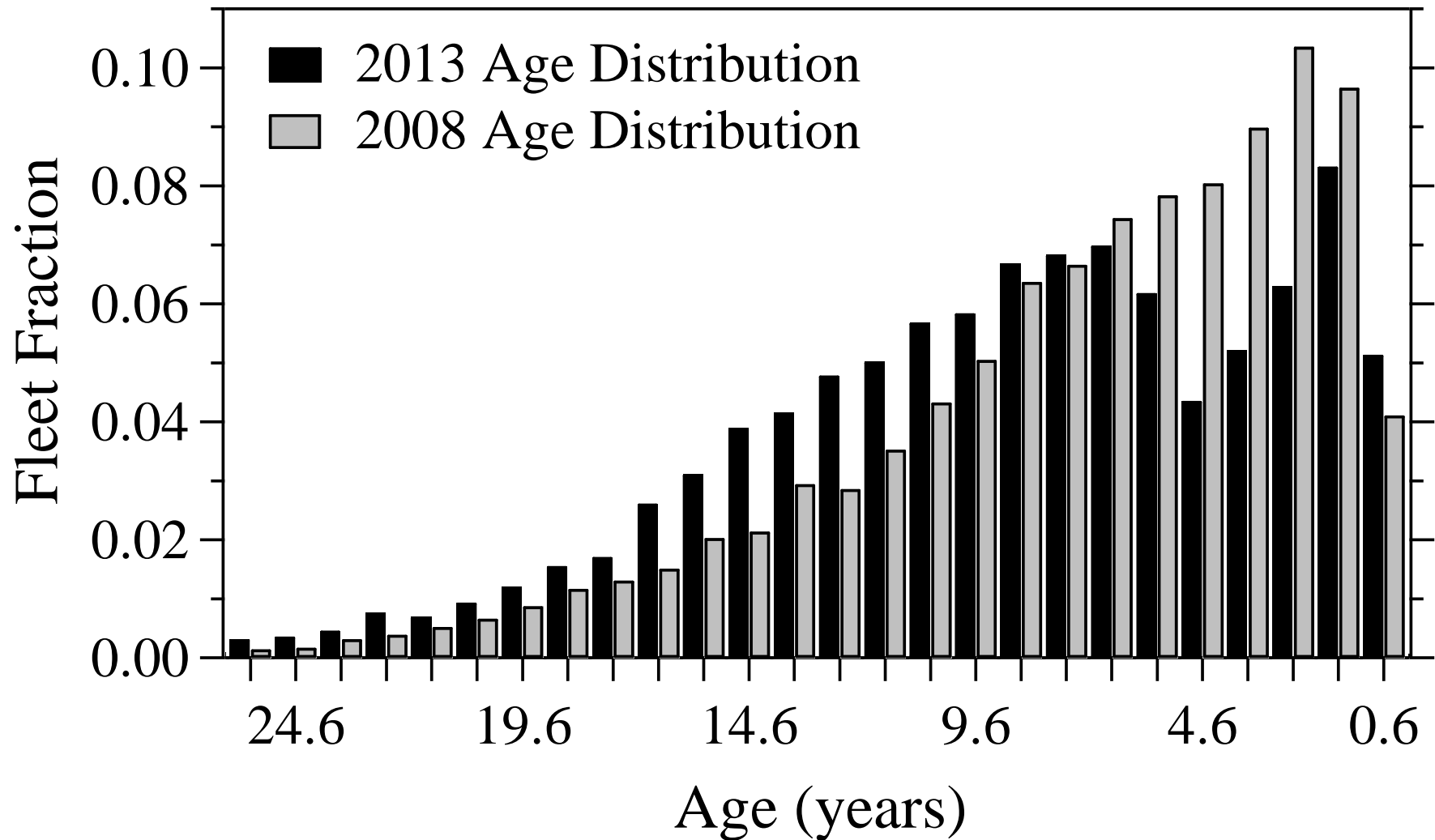
Tulsa and Denver Fleet Fractions



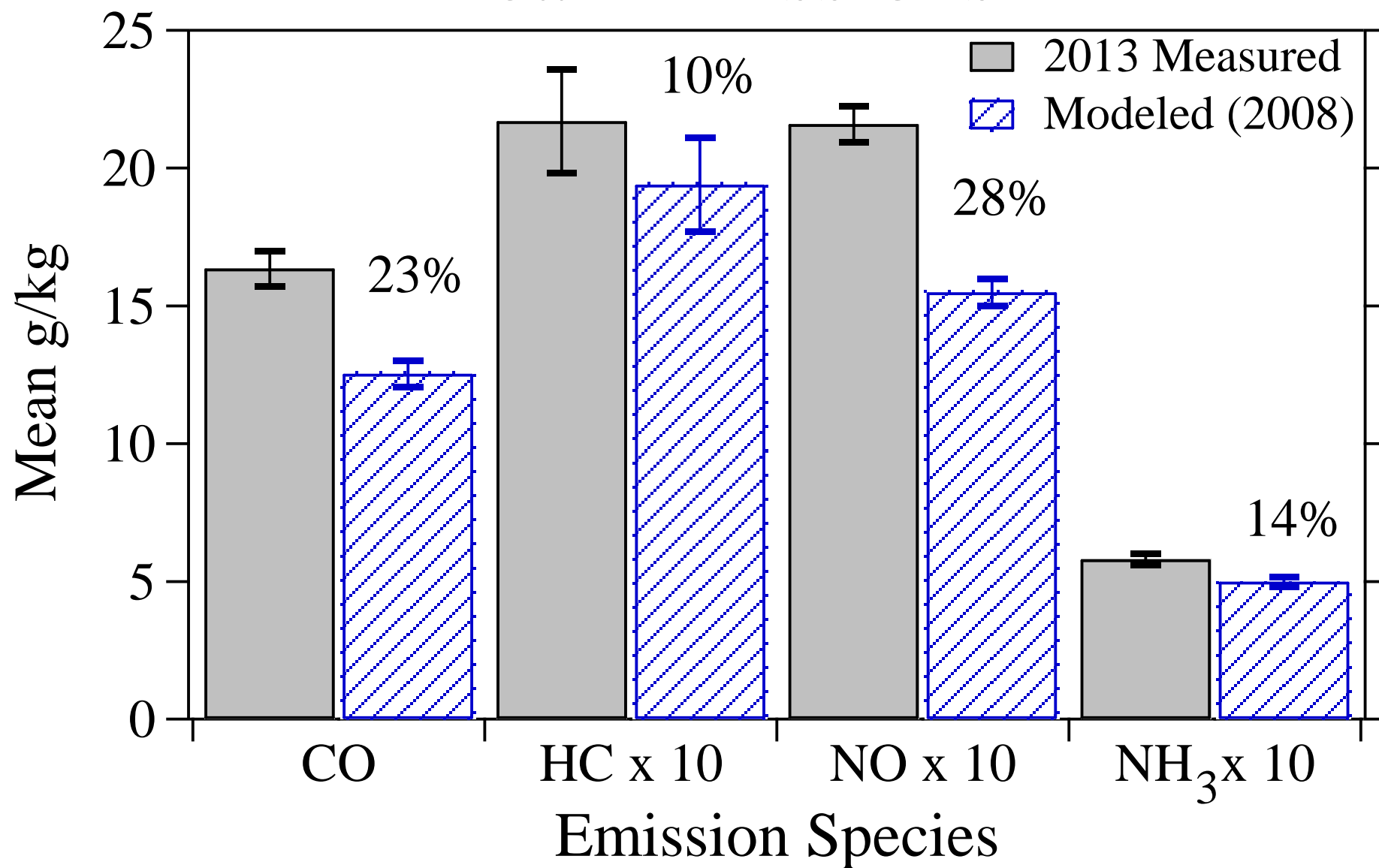
West LA Fleet Age Estimates



Where are the West LA Fleet Differences?



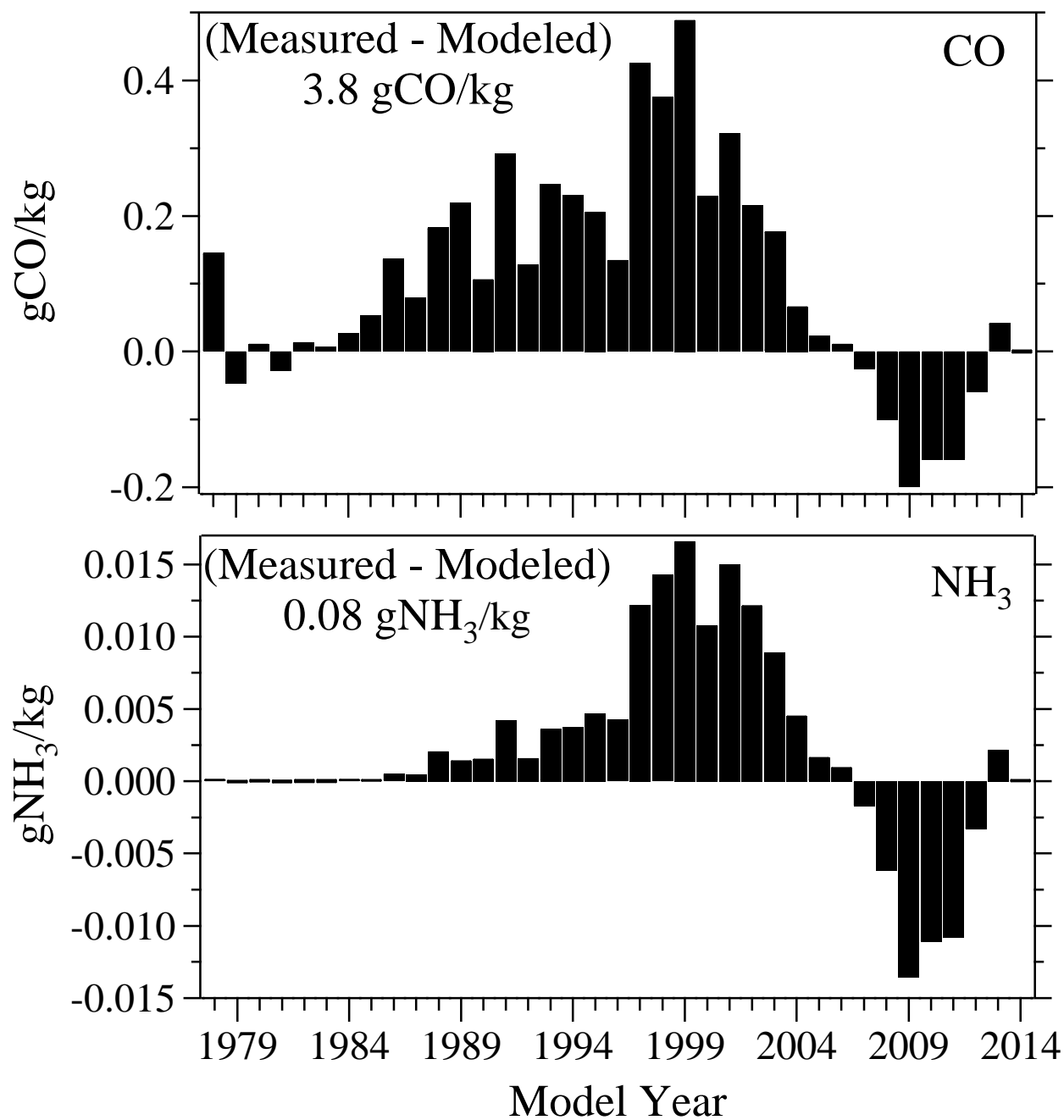
West LA Measured and Modeled Mean Emissions



West LA, Denver and Tulsa (Measurement – Modeled) Emission Comparison

Location	Δ gCO/kg	Δ gHC/kg	Δ gNO/kg	Δ gNH ₃ /kg
West LA	3.8 ± 0.8	0.2 ± 0.3	0.6 ± 0.1	0.08 ± 0.03
Denver	3.6 ± 1.1	0.2 ± 0.2	0.9 ± 0.2	0.07 ± 0.03
Tulsa	2.3 ± 0.5	0.2 ± 0.4	0.4 ± 0.1	0.03 ± 0.01

West LA (2013 Measured – Modeled) Differences



Conclusions

- The 2008 – 2010 recession significantly increased on-road light-duty fleet ages in Los Angeles, Tulsa and Denver.
- At the West LA site the age increase in May of 2013 was estimated between 1.7 and 2 years older.
- The West LA fleet emissions remained 10 to 28% higher than likely with historic fleet turnover rates.
- These emissions were predominately contributed by 10 to 20 year old vehicles in the West LA fleet.